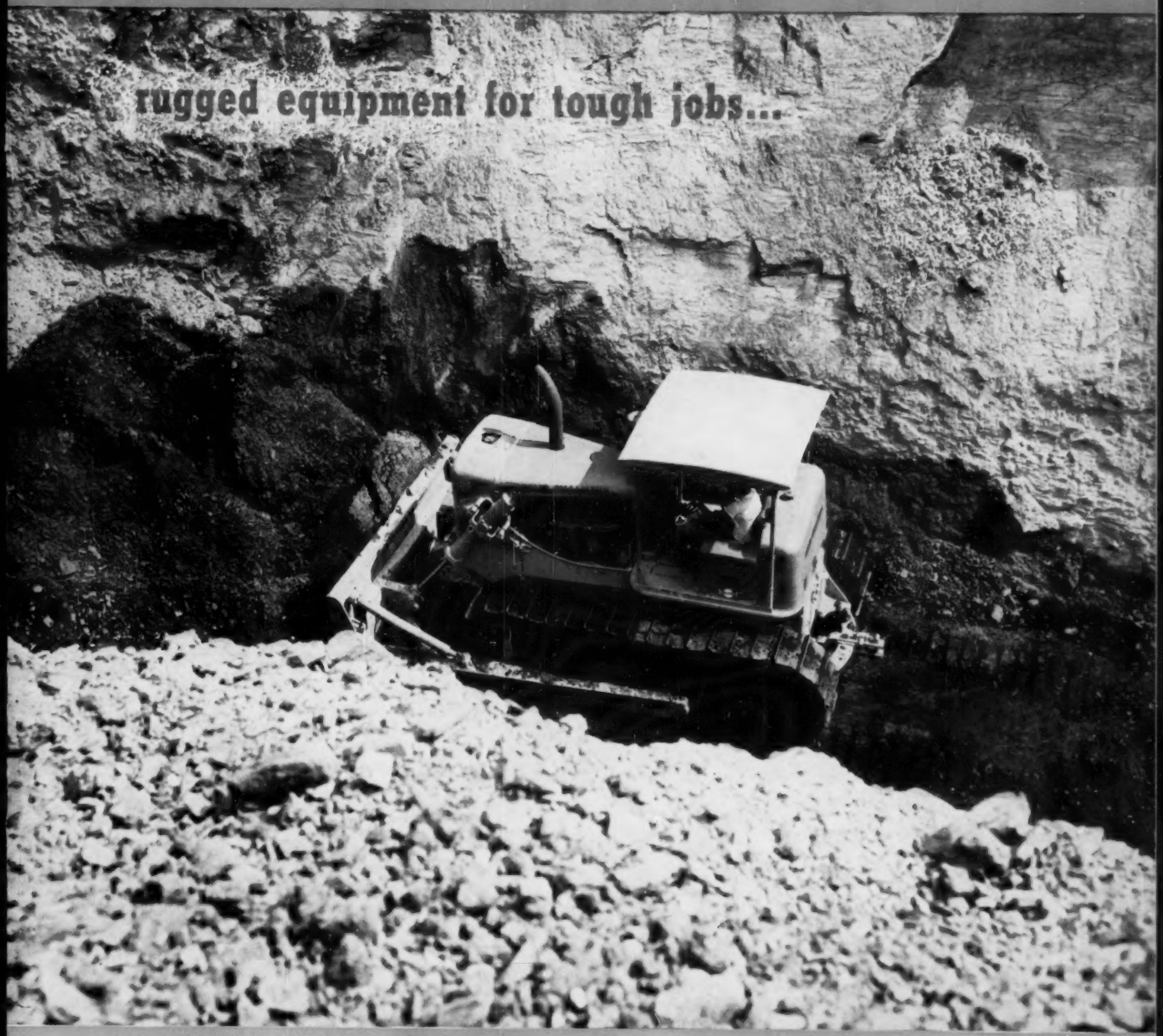
COAL MINING

UNIVERSITY MICROFILMS
313 N 1ST ST
ANN ARBOR, MICH

March, 1961

Volume 38, No. 3



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There's peace of mind, too, in buying exchange parts assemblies from Beckwith because they are guaranteed by a Bond of up to $5,000 against defective workmanship or materials.

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Earthmoving Equipment Is Our Business—Service, Our Concern

COAL MINING

Vol. XXXVIII March, 1961 No. 3

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Published by

Modern Mining Publishing Company

4575 Country Club Drive

Pittsburgh, Pa. Phone TU. 1-9411

P F. JASIK, Publisher and Editor

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Printed by

ADVANCE PRINTING & LITHO CO.

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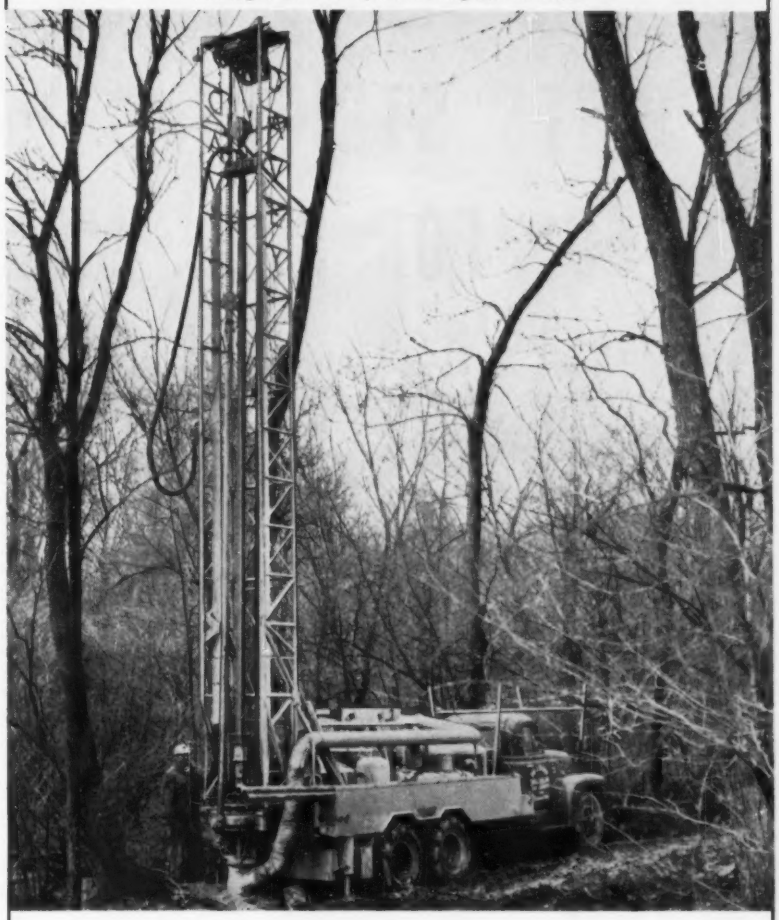
Davey Model M-75A Rotary Drill coal testing for Harbaugh Coal Co., Madison, Pa. Working in the woods, it is drilling 300 ft. holes.



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. . . these are just a few of many reasons why more and more leading mine operators and coal drilling contractors are standardizing on Davey.

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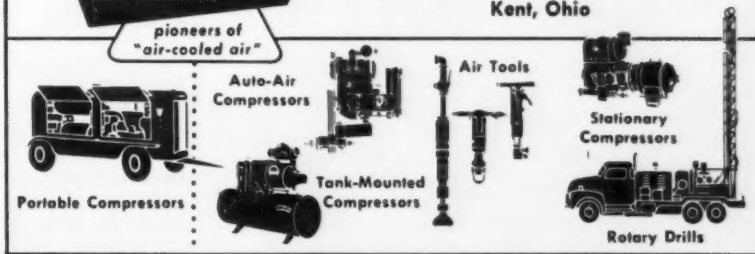


Published monthly by Modern Mining Publishing Company. Publication Office—Advance Printing & Litho Co., Erie, Pa. Editorial and Executive Offices—Erie, Pa. Pittsburgh Offices—P. F. JASIK, Publisher, 4575 Country Club Drive, Pittsburgh 36, Pa. Price: In the United States, $3.00 year; all other countries $5.00. Single copy 25 cents. Entered as second class matter at the Post Office at Erie, Penna., under the act of March 3, 1879.

CAT D9 SERIES E FROM BECKWITH BOOSTS STRIPPING PRODUCTION 30-50% FOR S. C. MONNIE . . . .

"It takes the hurry out of working fast." That is the way the veteran coal stripper S. C. Monnie describes his Cat D9E bulldozer. He is getting 30 - 50% more production out of the new D9 than he did with a previous unit at his strip job near Rochester Mills, Pa. The increase is due largely to the time-saving, cost-cutting power shift transmission and versatile hydraulic tilt blade.

In four hours work time, the D9 keeps a loading shovel busy for two shifts. The rest of the time she's benching for a 2-1/2 cu. yd. dragline and a 1-1/2 cu. yd. shovel.

Similar case histories on the new D9 attest to the new 335 HP turbocharged engine, the massive new undercarriage, lifetime rollers and operator-comfort features.

There is no harder work for the track-type tractors than coal-stripping . . . and there is no more successful production tool than the Cat D9E. Let us show you the power-shift model. It combines the best features of direct drive -- solid operating feel, efficient use of fuel and power -- with the flexibility and anti-stall characteristics of the torque converter machine.

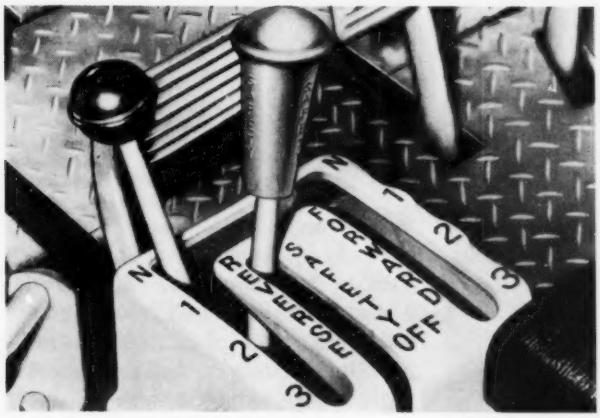
Beckwith will match the D9E against any tractor you have or can buy today. See it work and discover new production heights yourself.

S. C. Monnie

Monnie Retires "Big Ruth"

Back in 1956 when the S. C. Monnie Company of Glen Campbell, Pa. bought one of the very first Cat D9 tractors in Pennsylvania, production of the machine set new records in the stripping fields. Christened "Big Ruth", she worked for four years, logged 14,000 hours of service, only needed tracks and rollers replaced once. Well satisfied with the operation and reliability of "Big Ruth", Mr. S. C. Monnie hated to retire her . . . but even the best can be improved by Caterpillar. Mr. Monnie settled only for a replacement that could reach new production heights . . . the D9E.

HERE ARE ONLY A FEW OF THE MANY FEATURES THAT MAKE THE D9E BOSS OF THE BULLDOZERS



POWER SHIFT TRANSMISSION . . . Although both direct drive (with exclusive oil clutch) and torque converter drive are available, the power shift transmission offers lower cycle times for dozing, pushing and many other applications. You can shift on the go, under full load in split-seconds.

IMPROVED UNDERCARRIAGE . . . More massive than ever--bigger--stronger--more rugged. Larger links, pins, rollers, shoes, improved materials and the highest ground clearance in its class. Lifetime lubricated rollers never need lubrication until rebuild time.

MORE POWER . . . 335 Horsepower (up from 286) New design turbocharger increases power output. The D9E packs more lugging ability, delivered by an efficient, low-maintenance Cat Diesel Engine.

RUGGED ATTACHMENTS . . . Hydraulic tilt cylinder puts more prying power on the corner of the blade; permits quick on-the-go tilting of the bulldozer, speeds removal of rocks and stumps. A rugged ripper and other attachments make the D9E more useful around a mine.

Your Caterpillar Dealer

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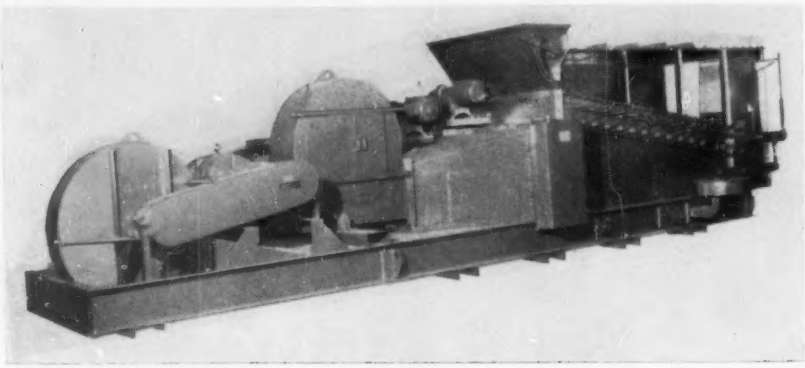
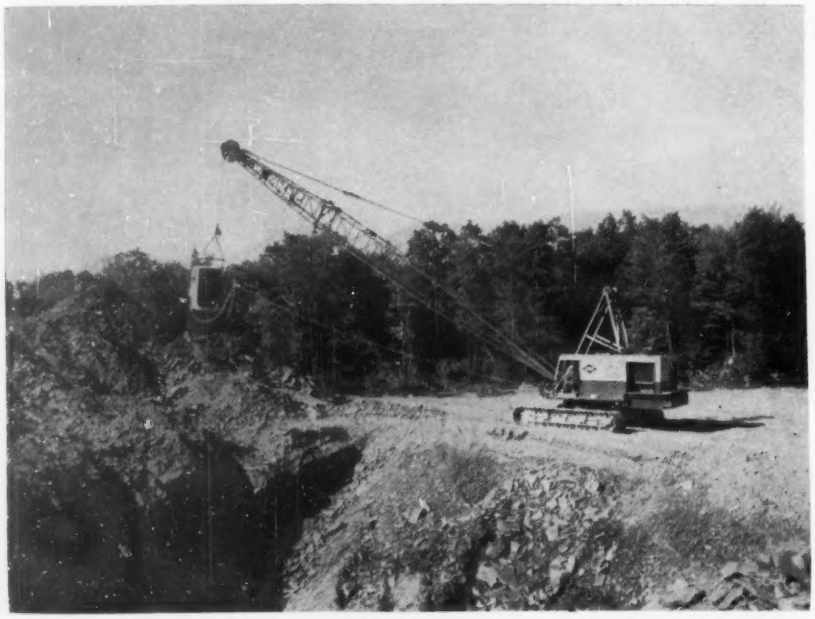
Earthmoving Equipment Is Our Business—Service, Our Concern





Lima 1250 . . . Thompson Bros. Coal Company, Philipsburg.

Allis-Chalmers HD-21 cuts drainage pond at P&N Coal Co. mines in Penfield.

◀ The new, compact Ridge Airjig now offers the lowest initial investment possible for efficient, coal preparation equipment. Operating on the dry separation principle that eliminates much accessory equipment such as pumps, etc . . . the Airjig permits loading of clean coal just as it comes from the separator without extra processing.

Counterbalanced rotating parts assure unusually smooth, easy operation . . . make heavy foundation structures completely unnecessary. And with all motors, blowers, etc. mounted on the same base with separator, the Airjig is easily transported on one truck. Makes ideal installation in existing plants with little or no installation on secondary reclamation or salvage jobs.

Designed to bring preparation cost down to within practical reach of even small producers, the Ridge Airjig is a dry separator for $\frac{5}{8}$"—0" coal. It performs with amazing efficiency even where feeds contain up to 8% moisture . . . operates from existing power supply.

Available in three standard models from 35 to 75 tph capacities, the Airjig is delivered ready to operate . . . eliminates ordering and production delays.

Complete literature and prices are available FREE upon request, from the manufacturer — Ridge Equipment Company, P. O. Fallentimber, Penna.

● Formsprag Holdback Clutches specially designed to prevent runback or reverse travel of inclined conveyors, bucket elevators, capstans, and related materials-handling or operating equipment provide the theme of a new, 12-page catalog just released by the Formsprag Company, Warren (Detroit), Michigan, manufacturers of precision power transmission products for industry.

The brochure concisely tells why and where Formsprag Holdback Clutches with torque capacities ranging from 1200 lbs. ft. to 136,-500 lbs. ft. are used. It also briefly explains how these sprag-type

clutches operate, and cites nine of their major design advantages.

Helpful supplementary information presented includes tables and charts covering speed and idler factors, and engineering, dimensional, and mounting data on 12 available models in bore sizes from 1⅛ to 12". A "Conveyor Holdback Worksheet" and a typical holdback clutch selection example are also given.

Copies of this factual literature are available to design engineers, purchasing agents or others concerned with holdback clutch applications. Write to the Formsprag Company, 23601 Hoover Road, Warren, Mich.

● Expansion of its Velvetouch Feramic truck brake block line to include ½-⅜ and ¼-inch thicknesses, as well as those of the previously available ¾-inch size, is announced by The S. K. Wellman Company, Bedford, Ohio.

The newly available blocks are especially recommended for light and medium trucks of ½ to 5 ton capacities. They are offered in oversize as well as standard units.

FSMI No. 2032 type.

Velvetouch Feramic blocks are said to be easy to install, require minimum adjustment and to possess exceptionally long, safe service life. Absence of fade, occasioned by heat, downhill operation, water and high speed, is said to be an outstanding characteristic.

Blocks are made of sintered ferrous metals, employed exclusively by S. K. Wellman. They are claimed to be unaffected by oil, grease and moisture.

For complete details, write The S. K. Wellman Company, 200 Egbert Road, Bedford, Ohio. Ask for Bulletins L-1392A and No. 28.

MARION . . . a dependable and profitable partner

FOR HEAVY-DUTY HAULING

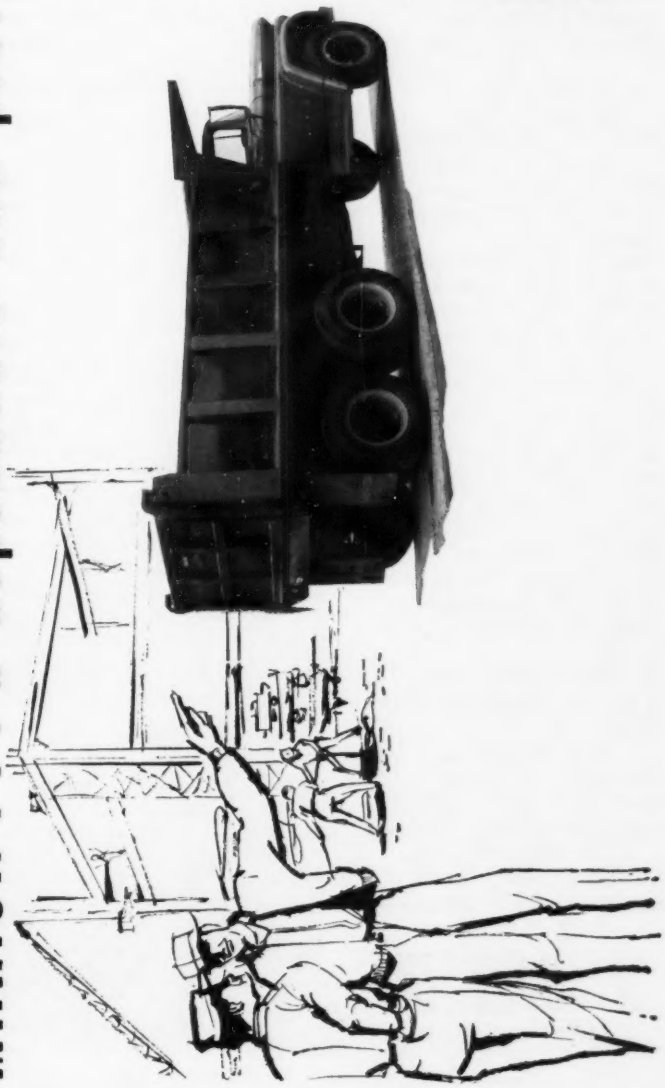
This heavy-duty, 10-yard Marion dump body is especially adaptable for use — in quarries . . . on construction sites . . . in and around gravel pits — wherever conditions are unusually severe and extra ruggedness is required for better off-the-road operations.

With this MD style body, contractors can take their choice of two types of extra strong, fast acting Marion hoists used for the dumping operation — a front mount telescopic hoist or an underbody, double arm hoist.

This combination of a heavy-duty Marion body and hoist has provided many owners throughout the country a dependable and profitable partner for their operations. It can do the same for you. We'd welcome the chance to give you all the facts.

MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO.
Marion, Ohio, U.S.A.



There is ONE

drill rig that is giving

results like THESE

for companies like THESE

American Smelting & Refining Co.
Ayrshire Collieries Corp.
Busby Coal Company
Cananea Consolidated Copper Co.
Carey, Baxter & Kennedy, Inc.
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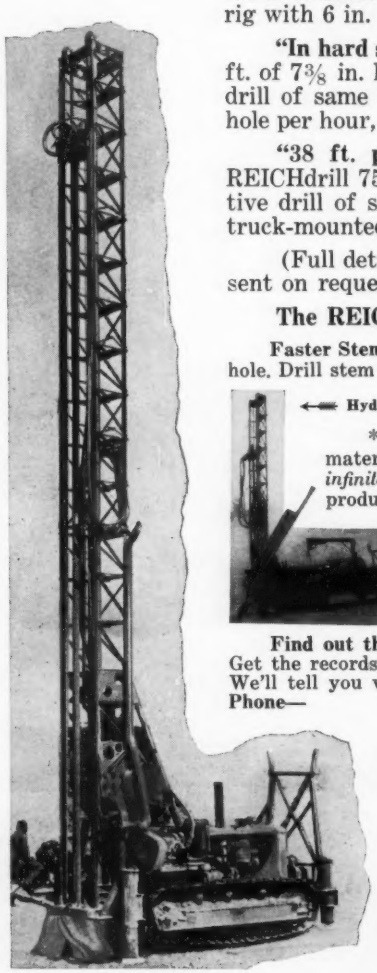
Cleveland Cliffs Iron Co.
Dow Chemical Company
Hanna Coal Co.
Jones & Laughlin Steel Corp.
M. & M. Stone Company
McCoy Coal Stripping Co.
Ohio River Collieries Co.
Oliver Iron Mining Co.
Peabody Coal Company
Phelps Dodge Corp.
Pima Mining Co.
Raleigh Eagle Coal Company
Red Parrot Coal Company
Saxton Coal Corp.
Sullivan Trail Coal Co.
Tasa Coal Company
U. S. Gypsum Company
U. S. Steel Corporation
Utah Construction Co.
Vecellio & Grogan
Warrior Constructors
Western Contracting Corp.
Winton Coal Co.

Also Foreign —
National Coal Board, Great Britain (43 drill rigs)
Atlas Consolidated Mining & Development Corp., Philippine Islands
National Coal Development Board of India

Above is a partial list of recent ORDERS and DELIVERIES



"80% more hole drilled by REICHdrill 650 in shale and medium sandstone, than by another hydraulic powered rotary of same rated capacity."

"3 other truck-mounted rotaries drilled a total of 221 ft. of 5⅝ inch hole per hour — one crawler-mounted REICHdrill 750 drilled 236 ft. of 6¼ inch hole per hour, and also *averaged 3,000 feet more per bit."**

"Weighing 6½ tons less than a crawler rotary that cost almost twice as much, REICHdrill 650 drilled 7⅜ in. holes approximately as fast in hard tough sandstone."

"Very hard rock, REICHdrill 650 with 6⅝ in. down-the-hole hammer drilled at rate of 54 ft. per hour; other rig with 6 in. hammer, 29 ft. per hour."

"In hard sandstone our 750 REICHdrill averaged 57 ft. of 7⅜ in. hole per hour, 1 man operating. Our other drill of same rated capacity averaged 41 ft. of 6¼ in. hole per hour, 2 men operating."

"38 ft. per hour of 7⅜ in. hole drilled by our REICHdrill 750 in hard dense blue sandstone—competitive drill of same rated capacity 18 ft. per hour, both truck-mounted."

(Full details of the above cases—and many more—sent on request)

The REICHdrill's greater speed is BUILT IN:

Faster Stem Loading of the REICHdrill saves time on every hole. Drill stem is added in *seconds* (Compare stem loading).

← Hydraulic Loader Barrel Loader →

***Exactly Right Drilling Speed** in every material — the only hydraulic rotary with *infinitely variable drilling speed.* Much bigger production with far lower bit cost.

Easiest Operation with minimum levers—all controls actuated by hydraulic power. *A real one-man rig.*

Find out the Extra Profit you'll make with a REICHdrill. Get the records made by REICHdrills of owners nearest you—We'll tell you where they are. **For full details Write, Wire or Phone—**

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Hazleton National Bank Bldg.
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REICHdrill

Do You Know?

● It has come to the point where one is afraid to eat eggs for breakfast or butter a roll for dinner, much less drink a glass of whole milk at bedtime. Why? Because cholesterol is found in animal fats and eggs. And because cholesterol is suspected of causing atherosclerosis, the narrowing or closing of the arteries leading to coronary attack.

And it may be true. Only research on a larger scale than has been attempted so far will answer the question.

Dr. Irvine H. Paige, director of research at the Cleveland Clinic Foundation, a former president of the American Heart Association, has a $50,000 grant from the National Heart Institute of the U. S. Public Health Service to make plans for a major diet study to learn if there is a decline in atherosclerosis after a reduction in the cholesterol level of the blood. This may involve studying thousand of persons, in their home environment.

The National Heart Institute for the fiscal year 1960 granter approximately $1,300,000 in support of research projects primarily concerned with the relation of nutrition to arteriosclerosis, the large majority of which is in atherosclerotic form. Cholesterol is included in included in the nutritional studies.

Also granted during the same period by NHI was approximatel $1,500,000 for biochemistry studies that will include some phases of cholestrol and its metabolism.

Among the numerous researchers interested in the cholestreol relationship to atherosclerosis is Dr. Weldon J. Walker, chief of cardiology, Walter Reed Army Medical Center in Washington.

Dr. Walker, with others at Harvard Medical School and Peter Bent Brigham Hospital, Boston, Mass., has studied the effect of weight reduction and caloric balance on serum lipoptein and cholesterol levels. He hopes to do further research along these lines.

In an interview, Dr. Walker said there are obviously other factors besides high cholesterol levels in the blood that are causing so many cases of coronary atherosclerosis. Blood clotting ability may be at fault, for example.

"In population studies throughout the world, however," Dr. Walker said, "among the middle-aged average serum cholesterol level is over 220 milligrams, the death rate is high. Where the average serum cholesterol is under 200 milligrams it is low."

Dr. Walker said some of the principal evidence linking atherosclerosis with altered cholesterol metabolism has been in the results of feeding laboratory animals cholesterol and following other dietary procedures with them.

"Experimental lesions produced in this way," he said, "are always preceded by an elevation of serum cholesterol and the lesions themselves have a high cholesterol content."

An increased incidence of atherosclerosis has been observed in diseases associated with hypercholesteremia (an excess of cholesterol in the blood) such as xanthoma tuberosum, myxedema, diabetes and nephrosis. Individuals who suffer coronary thrombosis, or myocardial infarction, early in life tend to have higher levels of serum cholesterol and lipoproteins than the general population.

There is no evidence, however, that dietary cholesterol elevates serum lipid levels or causes atherosclerosis in humans is largely endogenous, originating with the organism.

Dr. Walker said that weight reduction has been shown to lower cholesterol and that fat persons have a higher death rate than thin people. Insurance policy holders who are so fat they must have substandard policies have lost weight and consequently reduced their death rate.

"Since heart attacks were recognized as coronary thrombosis some 50 years ago," he said, "the Metropolitan Insurance Company paid out 50 times as much for this disease as it did for tuberculosis 50 years ago when TB was the leading cause of death."

There is apparently a protective quality for women in the hormones before menopause or hysterectomy, so that atherosclerosis is rare among them.

Almost universally among adult American males, Dr. Walker said, latent atherosclerosis exists without symptoms. A study of American soldiers killed in Korea showed 77% had demonstrable coronary sclerosis.

"More persons die from coronary atherosclerosis," he said, "than from all forms of cancer. It is like rust in the fuel lines of an automobile. Ordinarily a heart attack is either caused by a clot forming on top of the atheromatous plaque, largely made up of chloresterol, or by coronary thrombosis, formation of a clot in a branch of the coronary arteries that supply blood to the heart muscle, resulting in obstruction of the artery.

Dr. Walker believes that there is no point in getting cholesterol tests inasmuch as the count varies from hour to hour, and its level in the blood might be up as much as 100 points the next day. He considers the important thing is to maintain the weight at a lean level.

To keep cholesterol to a minimum, Dr. Walker advises drinking skim milk or buttermilk, which have most of the vitamins and minerals of whole milk without the animal fat and contain half the calories.

He himself eats no butter, advises corn oil as cheaper than safflower oil for use in preparing mayonnaise and says with a bit of salt such oils are a satifactory substitute for butter on toast. Eggs should be poached or boiled, he said, and fried foods should not be encouraged.

Even patients with peptic ulcer, he advised, will "do just as well on a high-protein Sippy mixture made from skim milk, skim milk powder, egg white and flavoring," as on the conventional high fat program. The amphoteric action (combining with both acids and bases) of proteins makes them especially effective in neutralizing gastric acidity.

In general it is wise to avoid saturated fats, which include butter, whole milk, most cheeses (except cottage cheese), ice cream, shortening and conventional margarines.

A saturated fat is one containing a full complement of hydrogen atoms along the carbon chain that forms the backbone of the fat molecules. If the chain is lacking one pair of hydrogen atoms, the fat is called monounsaturated. The main fat of this type, oleic acid, constitutes about 80% of the fat in olive oil. Oleic acid seems to be "neutral" in its effect on serum cholesterol, although some experts believe it may cause a slight elevation.

(Continued on page 18)

HERE AND THERE IN THE COAL INDUSTRY

● The School of Mines at West Virginia University, through its Department of Mining Extension, will offer the Eleventh Annual Short Course in Coal Preparation at Morgantown, West Virginia, June 12 to July 21, 1961.

The course objective is to provide an understanding of the basic techniques of coal preparation and their application to present day coal cleaning problems including:

1. Modification to existing plants
2. Upgrading fine sizes
3. Clarification of washery water and stream pollution.

The program includes both classroom and laboratory assignments and represents a full-time schedule for the students, with classes meeting from 8:00 A. M. to 4:00 P. M. daily for the duration of the course.

How To Compliment Your Employees

Compliments are one of the most effective non-financial rewards coal mining management can use.

by H. E. Carroll

Compliments have been described as verbal vitamins to give employees an added lift. As you use compliments in dealing with people under your supervision in your coal mine, you will find that they are a powerful stimulant to get better cooperation.

There are three types of compliments you can use in dealing with your employees:

1. First person
2. Second person
3. Third person

First person compliments are those you give directly to your employees. You come right out and make a sincere compliment to the employee. For example, here are a few examples of first person compliments:

"You have the highest production record in the mine."

"I am mighty proud of your Safety record."

"I wish everyone had as many good ideas as you suggest."

Second person compliments are at times more effective than the direct type. In this type of compliment, you "pass along" words of praise. It is often more believable and gets completely away from flattery.

Here are a couple of illustrations of this type of compliment:

"The front office was bragging to me about your safety record."

"Jim was telling me how you . . ."

To use second person compliments successfully, you need to be attentive to all compliments others give those under your supervision. Then, you casually "pass along" the verbal vitamins to the employee for an effective compliment.

Third person compliments can be most effective in dealing with employees under your supervision. You have an opportunity to "bank" your compliment and get more cooperation from two people instead of one as with most compliments.

For instance, you might say to Bill: "Jim sure turned in a swell suggestion the other day." Bill in turn passes the compliment along to Jim. They both feel good — Bill because he has a compliment he can pass along and Jim because he receives a compliment.

When you use the third person compliment, be sure you are not knocking the person you want to pass the compliment along. For instance, if you had said to Bill: "Jim is the best man in the department," it might boomerang. Bill might think you are telling him he is no good.

Here are some rules successful supervisors follow in passing out verbal vitamins:

Rule No. 1: **Don't flatter — compliment**. Flattery is insincere. To make your compliments effective you need to believe what you say. Be sincere. Base your compliments on facts and you will have an honest, sincere compliment.

Rule No. 2: **Turn doubts into compliments.** Complimenting Miss America on her beauty would not be a strong compliment. Or, complimenting anyone on anything of which they are sure is not good strategy. But, you can pack power into your verbal vitamins when you compliment a person on something he doubts.

For instance, one of the men in your mine comes to you about an idea for a change in procedure. You can tell whether or not he has a doubt by the way he presents his suggestion. If there is any doubt in his mind, you have a wonderful opportunity to compliment the employee on his well-thought out suggestion, his loyalty to the company, or on his creative powers.

Rule No. 3: **Be specific in your compliments.** Single word compliments are weak. For instance, words like "swell", "fine", "wonderful", and "good" are not the most effective compliments. They are not specific and hence lack the power of a good verbal vitamin.

You give your verbal vitamins more power when you are specific. For instance, instead of saying, "You have a fine safety record," you make your compliment more specific by saying, "Six years without an accident is a safety record to be proud of."

When you compliment an employee on his production record — repeat the figures of the record. When you compliment a man on a suggestion — repeat the suggestion as specifically as possible. Thus, you will make your compliment more believable and take it out of the "flattery" classification.

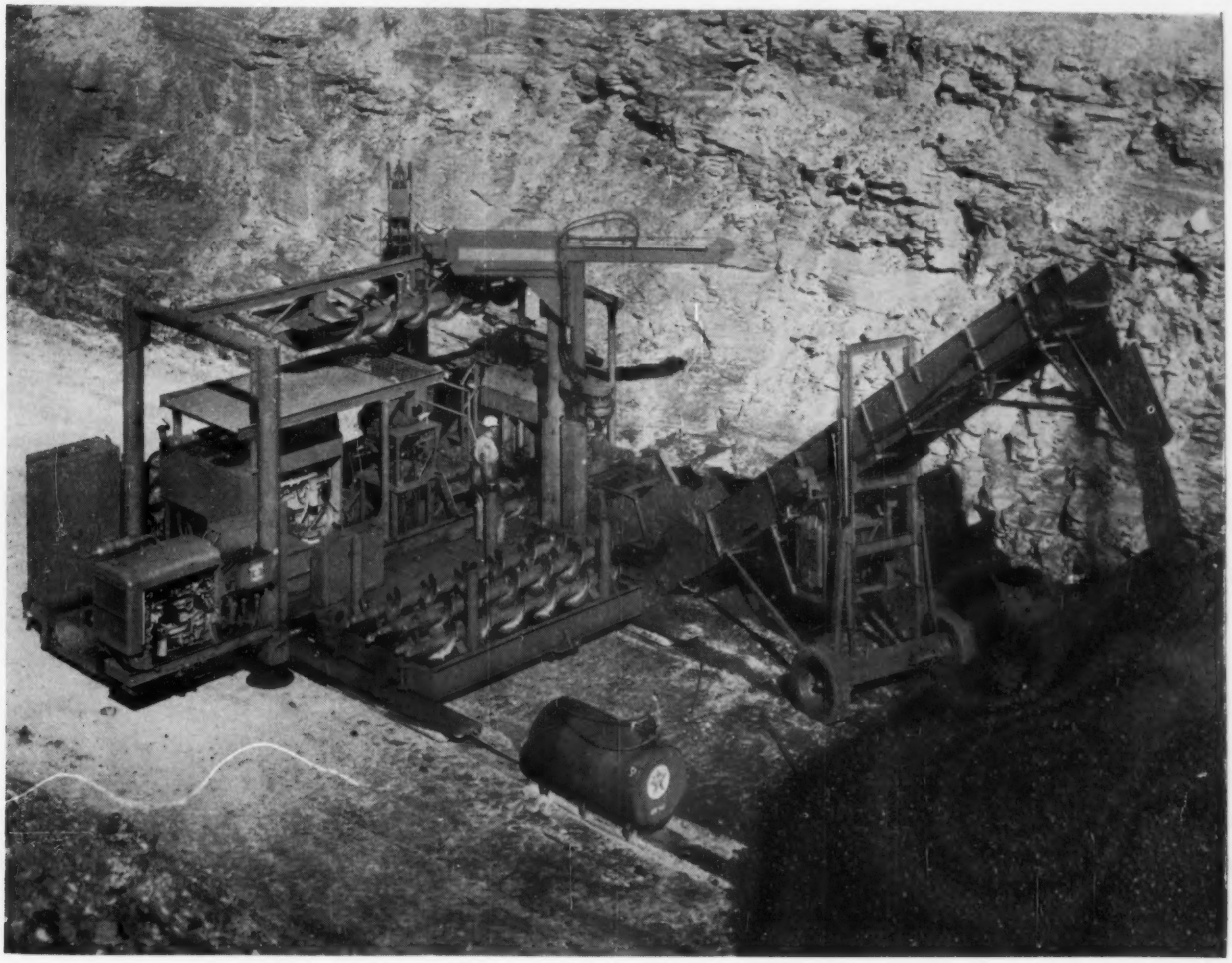
Rule No. 4: **Use comparative compliments. Superlative words like** "most" and "best" are apt to be taken as flattery by the employees you are complimenting. Then, too you will find that when you use the comparative form of the compliment (more or better), you can do it again and again. Something that is "best" or the "most" is just that — no chance for improvement.

There are other ways you can use the comparative form in your compliments. For instance, you might say:

"This is the best I have seen . . ."

"That looks like one of the most effective suggestions that has been submitted."

(Continued on page 16)



New Dual-Auger Coal Boring Machine

By CHARLES GOVIN, Chief Engineer
The Salem Tool Company, Salem, Ohio

A great deal of time is wasted in coal mining, even with today's mechanized system. Coal augering — recovery of low-seam coal — is now substantially faster because of design of The Salem Tool Company's new dual-auger machine.

Mine operators are continually looking for equipment which will better operations in four ways:

1. Provide an increased rate of profitable production in order to meet competitive markets.

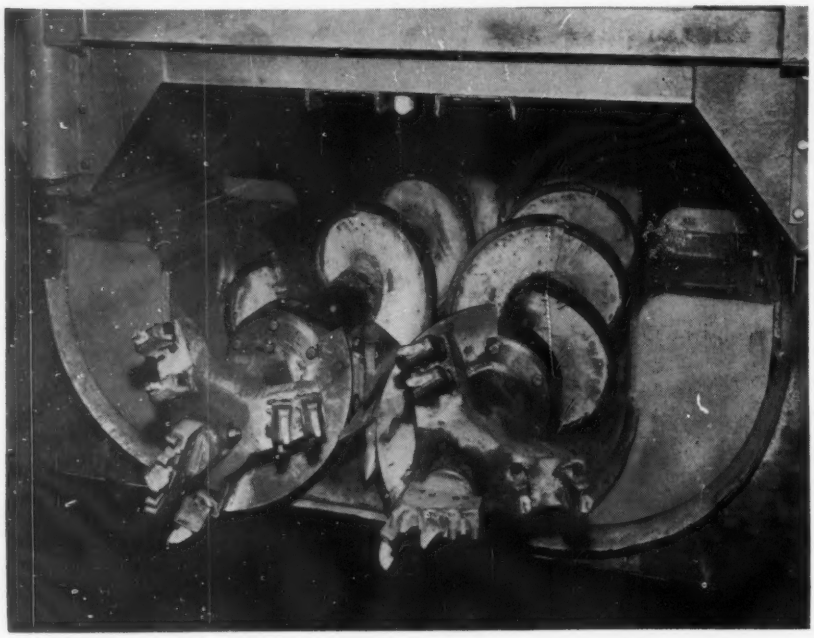
2. Provide a practical method to mine low-seam coal which presently cannot be mined at a profitable rate.

3. Provide a method of mining which will recover a higher percentage of available coal.

4. Feature rugged construction which will insure long machine life with low maintenance costs.

The Salem Tool Company, Salem, Ohio — long a leader in coal auger mining equipment — has developed a 55 ton high-speed, all hydraulic, self-propelled dual auger which, in recent tests run by a three-man crew, mined an average of 300 tons of coal per eight-hour shift using two 18 inch augers. Design of the machine permits use of auger sizes of 18 through 30 inches in diameter.

The machine bored a 150-foot hole in a vein that was only three inches thicker than the diameter of the hole cut, and the augers remained in the vein during entire augering operation. This is made possible through a new auger rotation method — rotating each auger in an opposite direction, thereby



eliminating the common fault of one cutting head "climbing over" the other. By rotating the augers in opposite directions, loose coal is conveyed back on each individual auger rather than forcing coal from one head into the other auger string.

Another unique feature of Salem's dual-augered machine is the improved auger handling system. Two special auger racks, which are removable and act as trailers, have been added alongside the machine frame. Each of these auger racks is capable of storing 250 feet of augers.

Through the use of special Salem Tool telescopic hydraulic auger hoists a pair of augers can be placed in the machine in eight seconds after auger drive mechanism is returned to back position. Also, by incorporating the new hoists, machine length has been significantly reduced.

Hydraulics play a major part in the greater efficiency of Salem Tool's new hydraulically—operated auger latches. Two pairs of cylinders, front and back, control latching pins which automatically couple and uncouple the augers from each other and from the machine.

The typical augering cycle which is repeated until the desired hole depths are obtained is as follows:

The combination cutting heads and lead augers are forced into the coal by the thrust from two cylinders. The cutting torque is applied to the augers from a 250 hp. diesel engine. The average time required for the pair of augers to advance into the coal 12 feet is 1.3 minutes. During this time, two more augers are placed in position ready for lowering into the machine. Hydraulic auger latches uncouple the drive head from augers and the carriage is returned to rear of machine hydraulically. The second pair of augers are now lowered into machine and augering cycle is repeated.

The total time required for the above auger cycle is considerably less than two minutes.

All of the above motions are accomplished through a combination of standard and specially designed pumps, directional control and relief valves, cylinders and motors.

To move the self-propelled machine from a completed pair of holes to the next position six hydraulic cylinders are used. After the boring operation is completed and all but the lead augers have been returned to the storage racks, the skids are moved into position by two hydraulic cylinders. The machine frame is lowered onto the skids and the skid cylinders pull the machine over the skids to the new augering position. The entire moving operation takes less than 1½ minutes. Competitive types of machines require considerable more time for moving since a bulldozer must be used to drag the machine to the next augering position.

A number of advantages are derived from this newly designed dual auger—

a. Practical depth of boring increased to 200 feet — a 100 percent increase over previously available equipment.

b. Cleaner coal since cutting heads stay within the vein rather than "drifting" into surrounding earth.

c. 50 percent increase of recovery rate of coal to be mined.

d. Increased coal recovery because of newly designed rib breakers and special cutting heads.

e. Improved coal quality and size consistency, since coal is moved at an equal rate along both auger strings back to conveyor, thereby eliminating crushing already-cut coal.

f. Greater tonnage per hour because of increased boring depth, faster hole-to-hole positioning, and more rapid coal recovery.

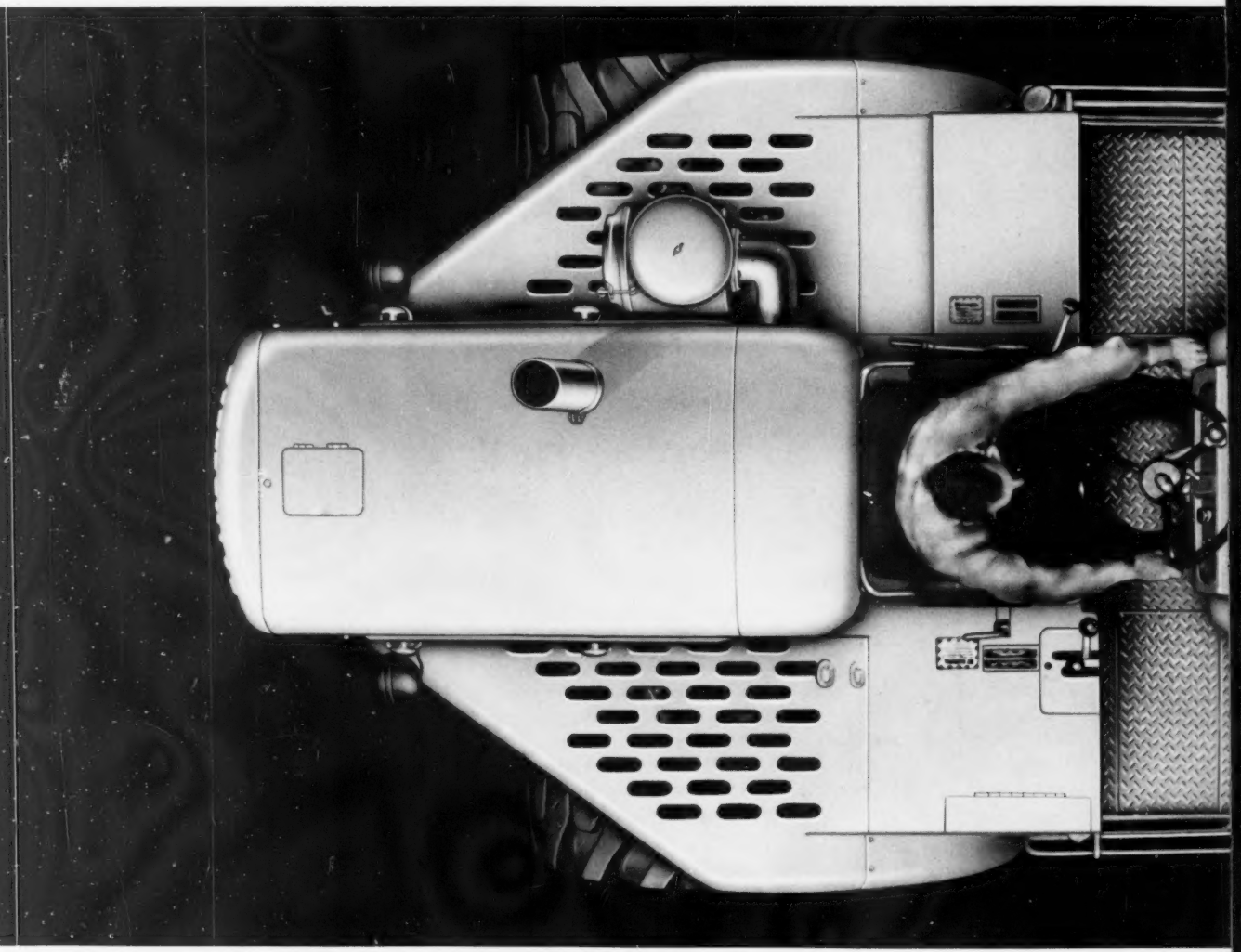
The Salem Tool Company has announced additional improvements over available equipment on the market. Six feet shorter than other comparable machines, and with greater maneuverability, this machine has an increased speed of operation built in by having all controls located so that the three operators never have to leave their positions. An added feature is the safety factor as a result of this. An improved high-wall screen and heavy-duty grating for catwalks have also been added for operator safety.

The 55-ton machine has been reduced to a length of 29 feet through tight engineering and economical arrangement of component parts. Over-all height is 16 feet and shipping width of the main frame is 10 feet.

There are more than 100 different loaders of all sizes and types on the market, but there are absolutely none like the 3 new Caterpillar wheel Loaders. Many hundreds of owners already have proved Cat wheel Traxcavators' superiority to their complete satisfaction. Here are some actual quotes—proof of their acceptance: "Tried one, bought 3!" "Most versatile machine we own." "Combines best features of all loaders." Enthusiastic? Yes! Exaggerated? NO!

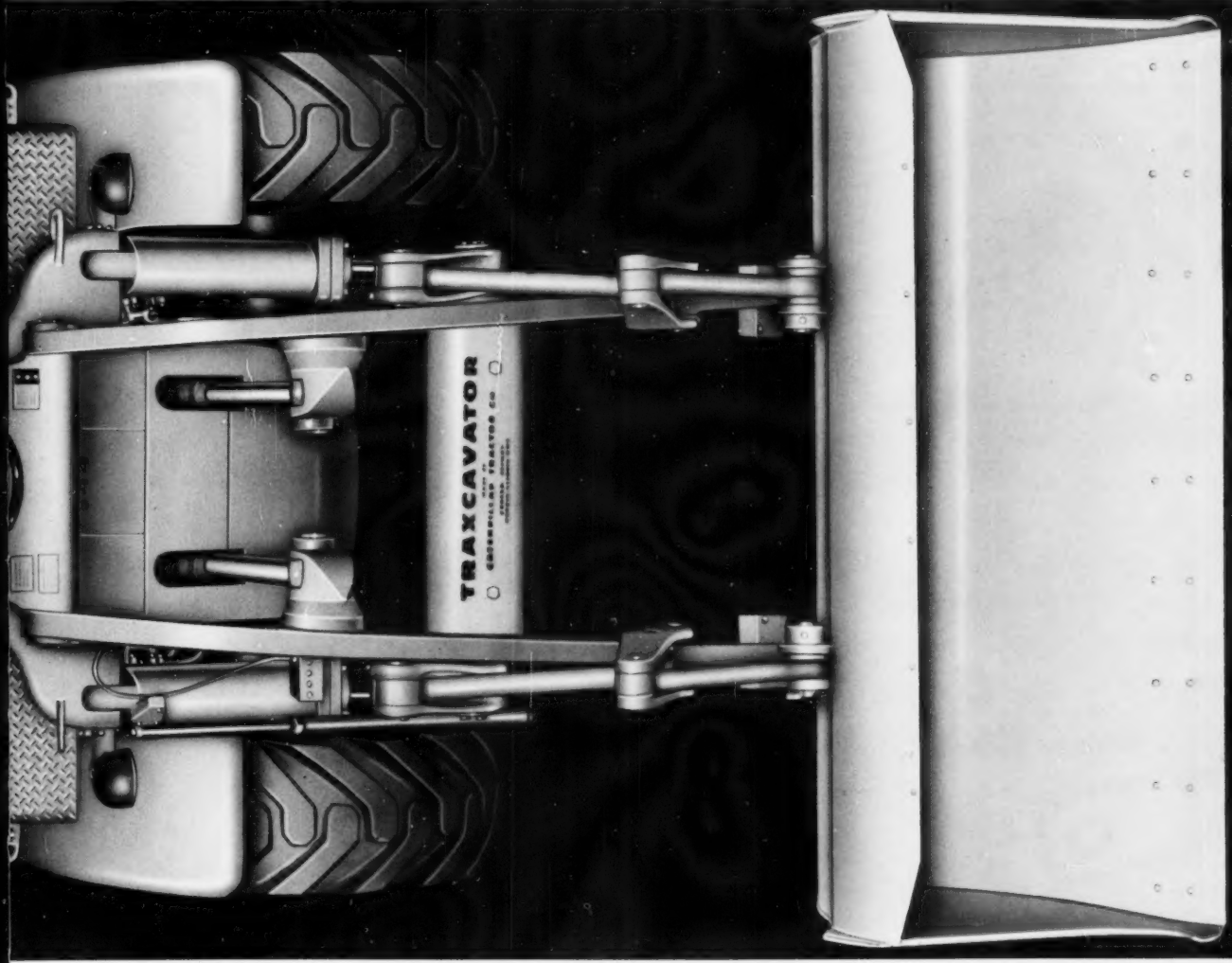
Turn the page for more owners' statements on how they feel about the new **CAT WHEEL LOADERS:**

Owners all over the country are saying, "This is what we've been waiting for—Caterpillar dependability in a wheel loader." And they're getting that dependability plus a great deal more. These 3 new Cat wheel-type Traxcavators were 7 years in the design and testing stage, then introduced about a year ago. From the beginning, they have been great performers. What do owners like most about them? Caterpillar dependability—the trouble-free operation owners have come to expect from Traxcavators over the past 23 years! Sand pit owners Fred and Herff Harris say, "Not a minute's down time in 1500 hours." Russell Standard Corp. report, "We bought on the strength of the Caterpillar reputation. Our Cat wheel Traxcavator lives up to that reputation." Speed is another reason construction men like Cat wheel Traxcavators—two work ranges, two travel ranges with reverse speeds 25% faster. J. Lee Milligan, Inc., contractor, "Our 944 moves twice as fast in high gear as another brand, loads



Easy to operate—all controls right at your finger tips—another reason owners prefer Cat wheel Traxcavators. Clarksville Stone Co., "Operators talk enthusiastically about the easy controls and automatic bucket positioners. Our best operators are even better, now." Franklin Sand & Gravel Co., "Easiest to steer and maneuver. Easy to get big production, too." Kenny Construction Co.'s operator, "Easiest loader to operate I've ever been on. You're not surrounded by hydraulics." The new Traxcavators' long reach, dumping height and fast hydraulic lift, speed production, too. "A lot better for loading ten-wheelers because of long reach," L. H. Gualt & Son. "We beat another unit 9 seconds on digging and lifting," 966 operator for Brown & Lam-

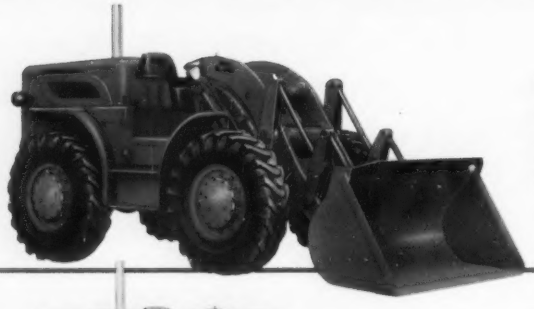
a lot more material per day, and goes anywhere." **Harris Sand Pit:** "We figure the speed of this machine plus the automatic bucket positioner gives us at least 25% more production than any other machine of the same size." **Designed for comfort—big, uncluttered deck, roomy seat, easy and safe to get on and off. Take the word of the man who knows: the operator. Southern Materials Company's operator reports,** "Easier to get on and off. It's a lot more comfortable. Automatic bucket positioners take a lot of the work off your hands which speeds up loading." **Operator for Virginia Lightweight Aggregate Corp. agrees,** "I get on and off as many as 30 times a day so I really appreciate the open area and easy steps." **And they all talk about versatility, too:** "Loads, cleans up around the yard, keeps the roads shaped up . . . very versatile," **asphalt plant foreman, Tom Williams. Councilman, Louis O. Dunn:** "A good, versatile, all-around machine. Our Cat-built Traxcavator handles easy and fast."



brecht. "Out-works a competitive unit 2 to 1," **Dandrea-Nardini, Inc. Another reason that gets favorable comment is dealer service:** "Service and parts availability were big reasons for switching to Traxcavator," **says Palmer Paving Corp. Town Supt., Donald Clark,** "We have never had to wait more than 24-hours for parts from our Cat Dealer. In so many ways, we've proved Cat equipment backed by our Cat Dealer is best." **These actual quotes are typical of Cat wheel Loader owners everywhere, demonstrating that Cat-built Traxcavators are the absolute leaders for dependability—speed—ease, comfort and safety of operation—versatility —production. And they are backed by equally outstanding and** dependable dealer service, **too!**

Ask us for more facts about the Cat wheel Traxcavator

966



Bucket capacity—2¾ cu. yd.
Engine HP, flywheel—140
Dumping height—12′-10″
Dumping reach at 7′ height—57″

944

Bucket capacity—2 cu. yd.
Engine HP, flywheel—105*
Dumping height—12′
Dumping reach at 7′ height—51″

922

Bucket capacity—1¼ cu. yd.
Engine HP, flywheel—80*
Dumping height—11′-2″
Dumping reach at 7′ height—41″
*Gasoline engine also available

Traxcavator features: Live action design—continuous crowding from wheels, constant power to bucket. Power shift transmission—smooth, effortless shifting, split-second speed and direction changes. Dual brakes—left brake neutralizes transmission, stops machine; right brake stops machine with transmission engaged. Unit construction—independent removal of engine, transmission, planetary final drives. Complete line of attachments—buckets for light or heavy materials, lift forks, exclusive Side Dump Buckets, etc. Ask us for a complete list. We're ready to send you literature—demonstrate the loader you need—prove with facts and action how tried and proved Cat wheel Traxcavators give you most for the money! Call or write us—today!

WHEEL AND TRACK-TYPE TRAXCAVATOR HEADQUARTERS FOR CATERPILLAR

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Excerpts of Papers Presented at St. Louis, Missouri Meeting of the Society of Mining Engineers of AIME

Sound Waves May Avert Coal Mine Roof Fall Disasters By Revealing Structural Defects. Bureau of Mines Experiments Encourage This Hope

By using sound waves to detect the structural nature of coal mine roofs, the U. S. Bureau of Mines is experimenting with processes which it hopes will afford preventative warnings and avert disasters now caused by falls of roofs, faces or ribs.

The problem of roof control in the coal mining industry is of major importance inasmuch as 65 percent of all coal mine fatalities result from such falls.

Charles E. Mongan, Jr., consulting physicist, of Pittsburgh, and Thomas C. Miller, Mining Health and Safety Engineer, Bureau of Mines, also Pittsburgh, reported on tests under way by the Roof Control Research Group at the Health and Safety Research Testing Center.

They cited data showing that most fatal accidents occur in advance or development work, in places 9 to 25 feet wide and within one to ten feet of the working face.

In 1958, at the suggestion of Edward Thomas, Chief, Roof Control Research Group, Bureau of Mines, an investigation was begun to determine whether sound waves introduced into mine roof rock would be reflected by hidden uncomfortities and inconsistencies (prevalent in coal mine roof) that induce or cause accidents. It was decided that the detecting device should be light and portable, with low power demands, that it be safe in the environment of an operating mine and that regular mine personnel should be able to operate it and read and interpret the results.

"In broad terms", said the paper, "the theory suggests that if we could introduce a wave train of proper character into the coal mine roof rock, we might read from the reflected or returning wave what condition has been encountered on its journey into the rock and back. As this is similar in many ways to detection methods such as sonar and radar, we believe that certain techniques can be borrowed and properly adapted from these fields."

The report stated that in both theory and actual experiments, in the laboratory and in underground testing, practicality has been indicated. It said that preliminary experiments showed qualitatively that a signal could easily be passed through 57 inches of material. Times of transit for the signals were short.

The authors went on to say:

"The suitability of a design for use in a mine having gas or a dusty environment has also been considered, and no particular difficulties are anticipated. More sensitive tranducers have been designed and are being built in the laboratory. The design and construction of a transistorized portable transmitter, which weighs only a few pounds and is safe to use in a gaseous or dusty mine atmosphere is under way."

Peabody Coal Co. Has Found Haulage System at Mine No. 10 Satisfactory

After eight years' experience, the Peabody Coal Co. has realized all the advantages it foresaw in the original planning of a haulage system for its Mine No. 10 at Pawnee, Ill., William J. Orlandi, Assistant to the Vice-President, reported.

"Even greater advantages have been realized by new developments in the belt conveyor field," said Mr. Orlandi, as he compared results with early hopes.

"Mine No. 10 produced four million tons in 1960," he said. "We expect to produce in excess of four and one-half million tons in 1961. This production is attained without any increase in the original estimated investment capital."

Mr. Orlandi said the mine has a total capital haulage investment of 3,500,000, including installation and maintenance of the supply track. He said that additional major investments will not be necessary for five to eight years.

Full Dimension System at Delmont Co. Coal Mines Has Been Encouraging

The comparatively new system of face haulage known as the "full dimension system" has been "very encouraging" at the Delmont Fuel Co. mines, at Hunkers, Pa., its President, R. H. Jamison, Jr., stated.

The method provides an uninterrupted flow of coal from a loader or continuous miner at the face to the main line transportation system. The equipment consists of a series of inter-connected chain conveyors that are mobile and articulated. In the operation described by Mr. Jamison, they will retract or extend a sufficient distance for the development of a five entry system, or, in the Colmol pillar section, provide reach of 210' in all directions from the section belt.

"Most notable among the favorable characteristics is a stepped up capacity to transport coal away

from the colmol during the final stages of the extraction of a pillar," said Mr. Jamison.

"Piling coal on the mine floor behind a miner during the final stages of the extraction of a pillar is risky business at best. In four feet of mining height this practice is even less desirable due to the very limited storage area. In the old workings in which the colmol is operating. Only one shuttle car could be used if that method of transportation were employed because only one roadway is maintained to the back of the machine. Under these conditions I would estimate a ton of minute production would be a reasonable rate to expect. However, under this same set of conditions, rates of four to five tons per minute are obtained with our 'full dimension system'. It follows that a higher percentage recovery is possibly along with additional safety and production where continuous transportation is available."

Illinois Mineral Economist Foresees Increased Uses Of State's Coal in Iron And Steel Production

Illinois coal is being used increasingly in the production of metallurgical coke and its much greater use in the future seems assured, Hubert E. Risser, of Urbana, Mineral Economist of the Illinois State Geological Survey, said today in a paper presented before the Coal Division of the Society of Mining Engineers. He discussed the adaptability of Illinois coal for use in iron and steel production.

The Society is constituent organization of the American Institute of Mining, Metallurgical, and Petroleum Engineers, which is in national convention.

"One of the principal advantages of Illinois coal is its nearness to the Illinois and Indiana steel centers," Mr. Risser pointed out. "The growing use indicates that this advantage can more than offset the claims to better oven performance that other coals make because of natural characteristics. A number of trends indicate that Illinois coal's economic advantage will improve further with the passage of time."

Mr. Risser went on to say:

"Technological trends that have promoted the upgrading of Illinois coals and their blending for use in coke ovens, together with economic trends that have placed Illinois coals in a favorable position, are largely responsible for the increased use of Illinois coal in the past. Still another factor which will strengthen the position of Illinois coals over the years to come is in the declining reserves and availability of the major coking coals now in use.

"If our population, our standard of living, and our consumption of steel increase over the next few years as they have in the past, we will find it more and more necessary to turn to new coals for the manufacture of coke. Within the next couple of decades, it is very likely that coking coal from the traditional sources simply will not be available."

Commenting on direct reduction processes, Mr. Risser said:

"Because Illinois has large deposits of readily minable coal suitable for such processes and a favorable location with respect to water transportation both from the Lake Superior iron deposits and those of South America, the Illinois coal industry appears to be in a strategic spot to benefit from such developments."

North Dakota Lignite Deposits May Find Gasification Important in Their Development

Gasification may play an important part in the development of the large lignite deposits in North Dakota, according to two experts stationed in Grand Forks with the Bureau of Mines Lignite Research Laboratory.

The prospect was outlined by W. H. Oppelt, Project Coordinator, and G. H. Gronhovd, Project Leader.

The paper discussed exploratory gasification experiments under slagging conditions made in the slagging section while disconnected from the rest of the gasifier. It pointed out that "an important approach to use of lignite is through gasification that produces gas for the manufacture of synthetic chemicals and fuels." The paper took up the design and preliminary operation of a slagging fixed-bed pressure gasification pilot plant.

Mr. Oppelt and another associate, W. R. Kube, Chemical Engineer, were authors of a meeting paper on bench-scale experiments on low-temperature carbonization of lignite and subbituminous coal at elevated pressure. Five low-rank coals, including two lignites, were involved.

HOW TO COMPLIMENT YOUR EMPLOYEE

(Continued from page 8)

You can use the superlative form if you compare it with something. For instance, the first example cited compares the "best" with the supervisor's experience. The second example compares it through the use of "one of the most" to qualify the superlative statement.

Rule No. 5: **Have plenty of variety.** Verbal vitamins need to have variety. Repeating the same compliment day-after-day to the same employee will be a boomerang. You need to add variety to your compliments to keep them on the believable level. And, as you know, it is mighty hard to be sincere about the same thing time-after-time.

You can compliment your employees on their attendance, performance (broken down into specific tasks), safety, ideas, outside achievements, (sports or election to offices, etc.) and their family. A little searching will reveal plenty of things your employees do that can be complimented sincerely.

Another way to add variety to your verbal vitamins is to vary the method used. Today give a first person compliment, tomorrow make it second person, and the next day try a third person compliment.

Successful supervisors give plenty of compliments to their employees. They know these non-financial verbal vitamins improve morale, increase cooperation, and get more accomplished in the coal mine.

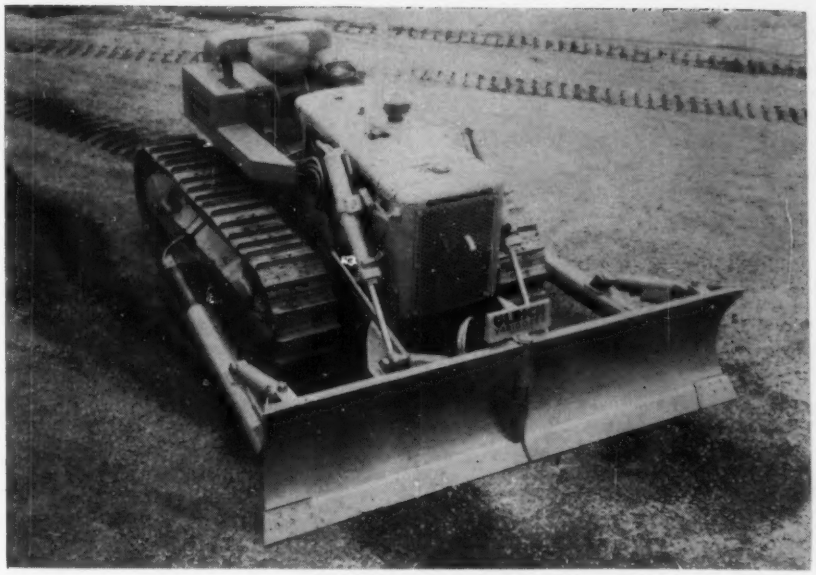
Ulrich Announces New Hydraulic Varidozer Blade

● Ever get in the middle of a bulldozing job and suddenly find that you needed an angle dozer instead of a straight blade? Or, maybe a forward "V" or tilted position of the blade would make the job go faster.

A new product recently announced by Ulrich Manufacturing Co., Roanoke, Illinois, may be just the tool needed by earthmovers to speed up the job and add greater versatility to that old standby, the bulldozer. Called the Ulrich Model 6H VARIDOZER, the new blade is a completely different utility bulldozer with an almost unlimited range hydraulically-controlled blade positions. Called the most revolutionary earthmoving tool in many years, the VARIDOZER can be changed in seconds from a straight blade to an angle blade, forward "V", reverse "V", tilt blade, or to any combination of these positions. The entire cycle of positions is controlled by four hydraulic levers mounted beside the tractor seat, giving instantaneous finger tip control of the blade, under full load or empty, while the machine is moving in either direction.

The secret of the VARIDOZER's versatility is the sturdy vertical hinge in the center of the blade, controlled by two rugged hydraulic push arms and two hydraulic tilt cylinders. Built to withstand terrific impact, the huge hinge permits each of the two sections of the blade to move independently to any position from full 25° angle forward to a full 25° to the rear. With the hydraulic control levers, the tractor operator can quickly select any position in between for either side of the blade, even under load.

A sturdy inside-mounted push frame supports the VARIDOZER. The push arms contain two fully protected 6" cylinders, while two 5" cylinders allow the entire blade to be tipped 10° forward or back and tilted up to 56" to either side.



STRAIGHT BLADE

Ulrich's new VARIDOZER presents a revolutionary design that enlarges the scope and efficiency of the bulldozer blade. In seconds you can change the VARIDOZER from a straight blade to a tilt blade, angle blade, forward "V", reverse "V", or any combination of these many useful positions. The sturdy hinge and positive hydraulic push arm action make possible fast blade changes under full load.

TILT BLADE

The new Ulrich VARIDOZER blade can be tilted up to 56" to either side with finger tip control. With its practically infinite variety of positions, the VARIDOZER has been able to outproduce larger tractors during extensive testing throughout the United States.

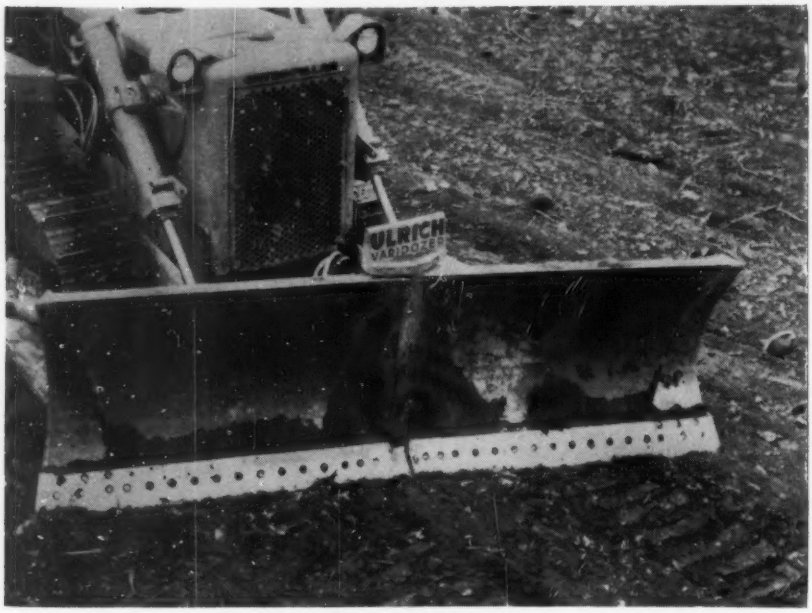
Extensive testing of the VARIDOZER has been conducted on a wide variety of jobs throughout the country. In land clearing, mining and general construction jobs the

Model 6H VARIDOZER mounted on a Cat D6 Tractor has been able to consistently out-produce larger straight blade-equipped tractors because of its versatility and quick-ability.

In operation, the new Ulrich VARIDOZER's blade positions allow the operators to take deeper cuts in hard material, drift larger loads without end spillage and generally speed up operations because of the ready availability of the right blade position to fit the job requirements as they change. For example, in a hillside roadbuilding job, the operator will make his first passes as an angle dozer. Pioneering completed, he will change to a forward "V" for transporting material from high to low spots. Then, shifting to a straight blade, he can do accurate finish work. The same versatility is available for other job aplications where the VARIDOZER is used.

Weighing about 6000 lbs., the Ulrich Model 6H VARIDOZER was designed to be used on Caterpillar D6 Tractors. This model is the first of a series, with VARIDOZER's to fit larger tractors planned for the future.

For more information on the DOZER, contact your Ulrich-Caterpillar Dealer, or write Ulrich Manufacturing Co., Roanoke, Ill.



ANGLE BLADE

Finger tip control of the rugged VARIDOZER blade makes it possible to instantly angle the blade up to 25° either direction.

The tractor can be moving forward with the blade angled, sidecasting the material. The operator can turn the tractor around and can immediately reverse the angle of the blade to continue sidecasting material the same direction as before. No dead heading necessary.

FORWARD "V" BLADE

The forward "V" position is particularly useful when earth or material is to be transported from one part of the job to another. While moving forward under full load, with finger tip control the operator can change from forward "V" to angle blade for sidecasting the material.

DO YOU KNOW?

(Continued from page 7)

The oils shown to have the greatest cholesterol-lowering effect are the poly-unsaturated fatty acids, which are lacking two or more pairs of hydrogen atoms. The most abundant is linoleic acid, which constitutes 40% to 55% of corn, soybean and cottonseed oils. Because linoleic acid cannot be manufactured by the body and is probably a necessary nutrient, at least for infants, it is often called an essential fatty acid.

The American Heart Association, which observes February as American Heart Month, has recommended through its Central Committee for Medical and Community Program a reduced fat consumption.

"Based on the best scientific information available at the present time," the Commmittee advises reasonable substitution of vegetable oils and other unsaturated fats for animal fats in the diet as a possible means of preventing atherosclerosis and lessening the risk of heart attacks and strokes.

The Committee urged, however, that medical guidance be sought before individuals make specific changes in the fat content of their diet, saying that fat reduction is probably of greatest potential benefit to these three groups:

Those who are overweight, those who have already had a heart attack or stroke, and men whose personal and family histories suggest that they may be particularly susceptible to atherosclerosis.

Allis-Chalmers HD-21s from Highway boost production... cut costs at leading mines

R. D. Baughman Coal Co., Brookville.

C & K Coal Co., West Freedom.

Marion Center Mining Co., Marion Center.

A. P. Weaver & Sons, Fryburg.

Harold A. Siegel Coal Co., Fryburg.

Highway

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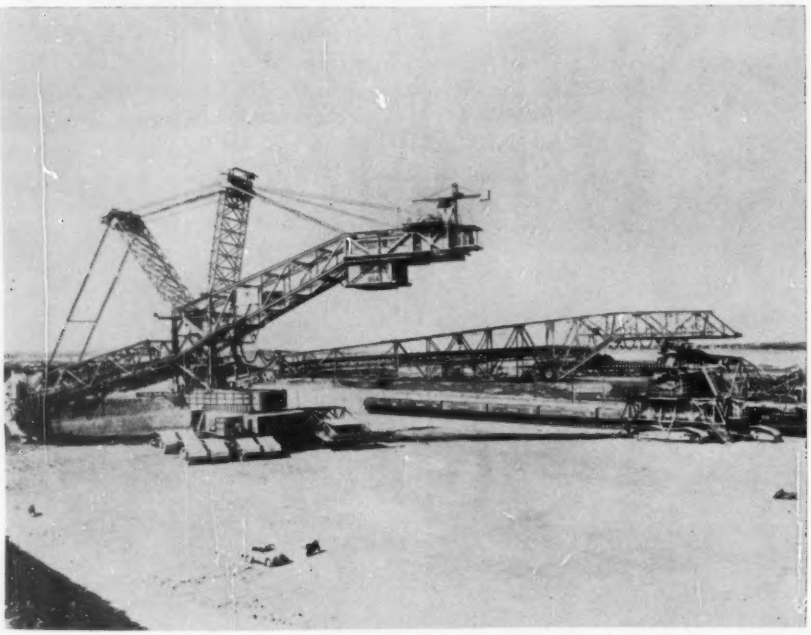
Rogers Trailers

A-3909A

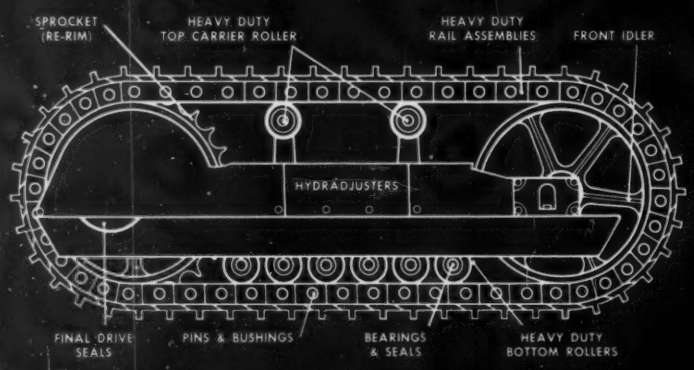
Asco Mining Co., Knox.



This bucket-wheel excavator is a medium-sized member of the line of West German excavating, reclaiming and stacking equipment built by Demag-Lauchhammer of Dusseldorf. The Wellman Engineering Company, an affiliate of McDowell Company, Inc., Cleveland, has been granted exclusive sales and manufacturing rights in the U.S.A. and Canada.

The machine illustrated has a capacity of 4900 cubic yards an hour. Largest models go up to 20,000 cubic yards per hour. Other specifications of the illustrated piece of equipment are as follows: Service weight, 2950 tons; bucket wheel diameter, 45.9 feet; height, 150 feet; length, 525 feet; total installed motor rating, 5,230 hp.

QUALITY REPLACEMENT PARTS IN STOCK FOR "CAT," "AC," "IHC"



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The Wellman Engineering Company, an affiliate of Cleveland's McDowell Company, Inc., has been granted an exclusive license to sell and manufacture the Demag-Lauchhammer line of wheel excavators, reclaimers and stackers in the U.S.A. and Canada.

The Lauchhammer equipment is designed for heavy-duty, high-volume materials handling. The excavators and stackers are available in a wide range of capacities, going as high as 20,000 cubic yards of material per hour.

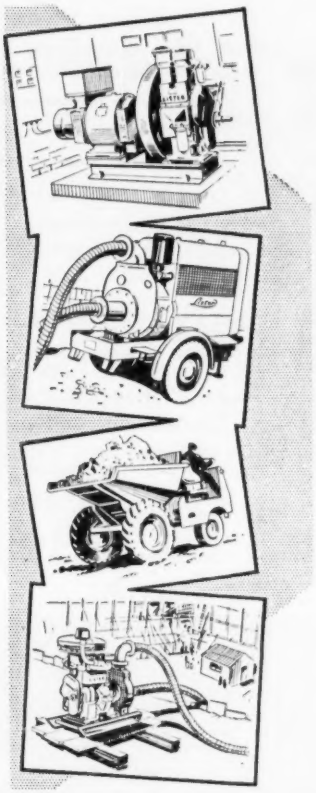
In Europe, the large bucket-wheel machine is preferred equipment for open-cast coal mining and volume overburden handling operations.

Wellman expects the Lauchhammer line to be useful in parallel material handling applications in this country. However, the company, which has served the steel industry since 1896, believes that a greater potential exists in ore and coal stockpiling, blending, and reclaiming as well as pellet handling systems. With the proper design to take advantage of the flexibility, high tonnage capacity, and inherent efficiency of the wheel-conveyor layouts, says Wellman, considerable economies are possible.

• New, cushion action push dozers, the No. 8C and No. 9C, that incorporate a single lift cylinder for hydraulic controls have been announced by Caterpillar Tractor Co. for Cat D8 Series H and the D9 Series E Tractors.

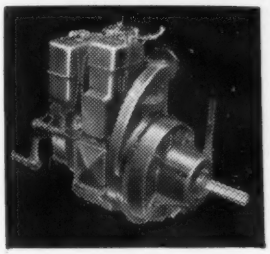
A case-mounted Cushion Push Block for the D8H and improvements to the 176 Hydraulic Control for the D8H and the 184 Hydraulic Control for the D9E were announced concurrently.

The versatile cushion push dozers, available for the first time on the D8H, were developed by Caterpillar initially for the D9E to fill a gap between full time bulldozing work and strictly pushloading applications. The No. 8C and No. 9C Bulldozers permit push tractor approach and contact with scrapers at relative speeds up to three miles per hour. The dozers are equally effec-



LISTER

power for all purposes



AIR-COOLED DIESEL ENGINES

1½ to 72 HP

Simplicity, dependability, long life, continuous trouble-free service are stressed in these unbelievably versatile, air-cooled compact LISTER Diesels, exceptionally adapted to your requirements.

See these engines at Booth 2574, Coal Mining Show, Cleveland, May 15-19.

Write for name of nearest distributor

LISTER-BLACKSTONE, Inc.

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Canadian Lister-Blackstone Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

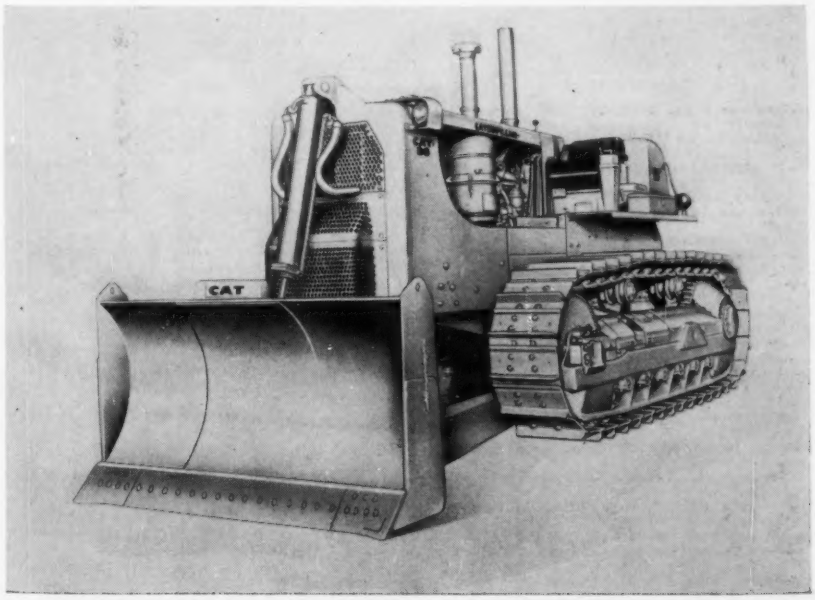
tive for smoothing the cut, haul road repairs and other normal dozing work.

Use of the single lift cylinder gives operators greatly improved forward vision. It is mounted by pinning at the top center of the radiator guard. Cable controls also are available for the cushion dozers on both tractors.

The new dozers incorporate improvements that give more complete cushioning. This was accomplished by lengthening the travel distance before "bottoming" of the four rubber springs. Each spring is composed of eleven separate discs, which are made of a new and softer rubber compound. Compression resistance, the amount of pressure necessary to "bottom" the springs, was lowered to 84,000 pounds.

The Cushion Push Block for the D8H Tractor is mounted directly to the bevel gear case and is designed to permit installation along with the rear mounted No. 29 Cable Control. Compression resistance of the Cushion Push Block is 110,000 pounds. Impact loading is absorbed by four rubber springs, each containing 16 individual discs.

Two new valve arrangements are available for both the 176 and 184 Hydraulic Controls. One version is a single valve arrangement and the other is a double valve combination, permitting control of both the dozer and a rear mounted ripper.



Cycle time reduction and increased spread performance are available through use of No. 8C Cushion Push Bulldozer. Newly announced Cat No. 8C Bulldozer permits push tractors to contact scrapers at speeds up to three mph. The new unit is available with either single lift cylinder hydraulic controls or cable control.

THERE'S NO PARTY SPLIT HERE
IT'S J. T. FISH FOR '61

The Coal Producer's Choice all the Way.

JOY EQUIPMENT—REBUILT

3—Joy 14BU 9AE Super Loaders — 26" Hi — New 1958.
3—Joy 14BU Loaders, low pedestal, 7AE, 1956 & 57.
6—Joy 14BU Loaders, medium pedestal, 7RBE.
4—Joy 14BU 3PE Loaders.
1—Joy 14 BU 3PE Loader.
2—Joy 12BU Joy Loaders complete with Piggybacks.
2—Joy 12BU Loaders, 9E latest type 250 V. DC.
3—Joy 12BU Loaders, 220/440 Volt AC.
1—Joy 20BU Loader, latest type.
4—Joy 11BU Loaders, latest type.
1—Joy 8BU Loader, 34" overall height.
2—Joy 8BU Loaders, 220 V. AC.
1—Joy curved Bar Head for 14BU. complete.
6—Reliance 24-J Motors, 7½ H.P.
4—Reliance 38-J Motors, 10 H.P.
4—Reliance 40J 15 H.P. Motors.
20—9-J Motors, 4 H.P.
2—Goodman 660 Loaders on Crawlers, 440 V. AC. like new.
1—Goodman 660 Loader on Crawlers, excellent 250 V. DC.
1—Goodman 665 Loader on Crawlers, latest type 250 V. DC.
1—Goodman 865 Loader, 26" hi. Rebuilt. 250 V. DC.
4—Joy 8SC Shuttle Cars. rebuilt.
4—Joy 6SC Shuttle Cars, rebuilt, latest type
1—Joy 5SC Shuttle Car, Excellent.
2—Joy 32E9 Shuttle Cars.
2—Joy 32E10 Shuttle Cars, rebuilt.
6—Joy 32E15 Shuttle Cars, rebuilt.
4—Joy 32E16 Shuttle Cars, rebuilt.
10—Joy 42E16 Shuttle Cars, rebuilt.
1—Joy CD-22 Drills, on rubber, like new.
6—Joy T-2-5 low pan Crawler Trucks, rebuilt.
1—Joy T-2-6 low pan Crawler Truck with reel.
2—Joy T-1, Standard Crawler Trucks, 220 AC.
1—Joy T-1 Standard Crawler Truck, 250 DC.
4—Joy 11-B Cutting Mach., like new, 35 & 50 HP.
1—Joy 7-B Cutting Mach., like new, 250 V. DC.
2—Goodman 212 Cutting Machines, 19" high.
1—Goodman 312 Cutting Machine, 17" high.
3—Goodman 412 Cutting Machines, 19" high.
1—Goodman Machine on Crawler, 31" high. All hydraulic.
6—Goodman 512 Machines with Bugdusters.
6—Goodman 612 Cutting Machines, 250 & 500 volt.
1—Jeffrey 70 URB rubber tired Cutter. Universal head, perfect condition.
1—Goodman 2410 Rubber Tired Cutter, Universal head, like new.
3—Joy 11RU Rubber Tired Cutters, with bugdusters. Universal heads, dual tires, like new. 250 V. DC.
1—Joy 10RU Rubber Tired Cutter, Universal head. 220/440 V. AC. Perfect
4—Joy 10RU Rubber Tired Cutters, Universal Head, 250 V. DC. Rebuilt or as is.
6—7AU's on track, Universal head.
2—Jeffrey 29UC Cutting Machines, Universal head, cuts anywhere in seam, 38" high, on Crawlers, 250 volt D.C.
1—Jeffrey 29LC on Crawlers, rebuilt.

LOCOMOTIVES

1—Goodman 6 ton, 93-A, 27" high, armor plate frame.
1—Jeffrey 15 ton MH-77 locomotive, armor plate frame.
3—Jeffrey, 13 ton, type MH-110, 36",42",44" ga.
2—Jeffrey 10 ton, type MH-110, 42" and 44" ga.
2—Jeffrey, 10 ton, type MH-78, 42" and 44" ga.
2—Goodman 8-30 and 10-30 Locos., 26" above rail.
1—Jeffrey MH-150, 6 ton, 26" overall height, rebuilt with reel.
12—Jeffrey, 6 ton, type MH-88, 42", 44" and 48" ga.
4—Jeffrey, 8 ton, type MH-100 2½" armor plate frames.
3—Jeffrey, 4 ton, type MH-96, 42", 44" and 48" ga.
1—G.E., 4 ton, type 825 Locomotive, 22" high.
10—G.E., 6 ton, types 801, 803, 821 Locomotives. 42", 44" and 48" ga
1—G.E., 8 ton, type 822 Locomotive, 44" ga.
3—G.E., 10 ton, type 809 Locomotives, 42", 44" and 48" ga.
2—G. E. 13 ton, type 829 Locomotives, armor plate frames.
1—Goodman 91A Locomotive, 8 ton, 26" overall height.
2—Goodman, type 33, 6 ton, 44" and 48" ga.
3—Westinghouse type 902, 4 ton, 42" and 48" ga.
2—Atlas Battery Locomotives, 36" ga.
1—Atlas Trolley Locomotive, 4 ton, 24" high.
2—Westinghouse, type 904, 6 ton, 44" and 48" ga.
2—Westinghouse, type 906, 44" and 48" ga.
2—Westinghouse, type 907, 10 ton, 44" and 48" ga.
3—Westinghouse 908, 13 ton, Locomotives, 42" and 48" ga.
8—Jeffrey MH-78 Locomotive Units, cheap.
6—Jeffrey MH-100 Locomotive Units, resonable.
3—Plymouth Diesel Locomotives, 8 and 10 tons, 42" and 44" ga.
Locomotive Trucks & Spare Armatures for the above.

TIPPLE EQUIPMENT

1—All Steel 5 Track Tipple, new 1957, complete with washer, silo, oil treating system, all bolted construction.
1—Complete Five Track Tipple with Washers and Air Tables.
1—Complete stoker plant, all steel.
2—Complete Tipples, 3 & 5 track, steel and wood.
3—Cleaning Plants, 1 ea. McNally, Roberts and Schaefer, Jeffrey Washers and Air-Flo Tables.
4—Complete Aerial Trams for coal or refuse.
3—Complete Rope and Button Lines.
2—Monitor Lines complete with Drums, excel.
1—Allis-Chalmers 5 x 12 Rippflo Vibrator.
1—Allis-Chalmers 4 x 12 Low-Head Vibrator.
1—Robins Gyrex Vibrator, 4 x 10.
10—Belt and Apron type Loading Booms.
6—Shaker Screens.
1—Robins Car Shakeout.
1—Gundlach Crusher, like new.
20—Crushers, various sizes—Jeffrey, McLanahan & McNally.
4—Mine Scales, 10 & 20 ton.
3—Truck Scales, 25 to 40 ton, late type.
Feeders, Belt and Drag Conveyors, Car Retarders.

CUTTING MACHINES

1—Joy 10RU Rubber Tired Cutter, Universal head, 220/440 volt AC, Perfect.
3—Joy 10RU Rubber Tired Cutters, Universal head, 250 V DC, as is or rebuilt.
2—Joy 11RU Rubber Tired Cutters, 250 V. DC. rebuilt.
1—Goodman 2410 Rubber Tired Cutter. Universal head, new 1956. Excellent.
2—Jeffrey 29UC Universal Machines on Crawlers
1—Goodman on Crawlers, 31" overall height.
3—Baby Goodman 212's, rebuilt. 250 V. D. C.
4—Goodman 312 Cutting Machines, 17" high.
3—Goodman 412 Cutting Machines, 19" high.
6—Goodman 512's with Bugdusters, like new.
4—Goodman 512's, rebuilt, or as removed from service.
6—Goodman 612,s—250 & 500 Volt A. C.
3—Goodman 112's, 220/440 Volt A. C.
1—Joy 7-B Cutting Machine, 250 Volt D. C.
4—Joy 11B Cutting Machines, rebuilt, 35 & 50 H. P.
6—7AU's, on track, Universal head.
10—Goodman 12AA's and 112AA's, 220 V. D. C.
2—Goodman 324 Slabbers.
2—Goodman 724 Slabbers.
2—Goodman 824 Slabbers.
6—Jeffrey 35L's, like new, 250 V. D. C. 17" high.
2—Jeffrey 35L's, on low vein trucks.
2—Jeffrey 35L's, 220/440 A. C.
3—Jeffrey 35BB's 220/440 A. C.
15—Jeffrey 35B's and 35BB's 250 V. D. C.
2—Jeffrey 29B's on track.
10—Jeffrey 29C's track mounted.
2—Jeffrey 29L's, on Crawlers. Excellent.
4—Sullivan CE7, 220/440 V. AC.

CONVEYORS

2—Goodman 97HC 30" & 36" Rope Belts, 1600' perfect with or without rubber.
2—Jeffrey 52-B tandem drive 30" Belt Conveyors 1,500'.
1—Jeffrey 52-B tandem drive 26" Belt Conveyor.
1—Joy 30" Underground Belt Conveyor. Excell.
1—Goodman 97-C, 30" tandem drive.
1—Goodman 97-C, 26" Conveyor. 1,000 long.
1—Robins 36" tandem drive, with or without structure.
1,200' Robins 36" Underground Structure, like new.
1,000' Conveyor Belt, 42".
4,000' Conveyor Belt, 36".
3,000' Conveyor Belt, 30".
4,000' Conveyor Belt, 26".
8—Jeffrey 61AM 12" Chain Conveyors, 300'.
2—61EW Elevating Conveyors.
2—61WH 15" Room Conveyors, 300'.
2—Joy 15" Room Conveyors, 300'.
2—Joy 20" Conveyors, 300'.
4—Joy Ladel UN-17 Shakers.
10—Goodman G-12½ and G-15 Shakers.
1,000' Goodman 18" Flat Belt Conveyors, tandem drive any length, Perfect.

CONVERTORS AND DIESEL PLANTS

2—500KW G. E. Stationary Rectifiers.
4—1,000KW Stationary Rectifiers.
2—100KW. G. E. TCC-6's, 275 V., Rotary Converter.
1—150KW. G. E. HCC-6 275 V., Rotary Converters.
1—150KW. 6 phase. Allis-Chalmers Rotary Converters, 275 V. D. C.
2—200KW G. E. HCC-6's, Rotary Convertors, 275 V. D. C. Steel frames, Newly rewound.
3—300KW G. E. HCC-6's Rotary Converters, 275 V. D. C. Like New.
2—300KW Westinghouse, 6 phase, Rotary Converters, 275 V. D. C.
2—500KW. West. Rotary Converters, 275 V. D.C. Perfect.
2—200KW Westinghouse Rotary Converters, 275 V. D.C. Newly Rewound.
(All the above with 6900/13000 and/or 2300/4000 primary transformers).
2—100KW MG Sets, 275 V. DC.
2—150KW MG Sets, G.E. and West., 275 V. D.C.
1—200KW MG Set, rebuilt, 275 V. D. C.
1—200KW MG Sets, G. E. perfect, 275 V. D. C.
2—300KW G.E. MG Sets, like new.
1—300KW West. 600 volt MG Set, rebuilt.
2—300KW Westinghouse, 600 volt, 6 phase. Rotary Converters.
2—500KW Westinghouse, 600 volt, D.C., 6 phase, Rotary Converters.
2—500KW HCC-6's, Rotary Converters, 6 phase, 600 V. D.C.
1—GMC-471 Diesel with 60KW, 250 V. D.C. Gen.
3—GMC-671 Diesels with 75 & 110KW, 250 V. DC, Gen.

LOADING MACHINES

16—Joy Loaders, 14BU, 12BU, 8BU, 11BU, 20BU.
5—Joy 12BU9E Loaders, 220/440 V. A.C. Excellent.
3—Joy 12BU9E Loaders, latest type.
2—Joy 12BU with Piggyback Conveyors.
2—Goodman 865 Loaders, 26", on crawlers.
1—Goodman 665 Loader, on Crawlers, rebuilt.
2—Goodman 660 Loaders, 440 V. A. C. perfect.
1—Goodman 660 Loader, on Crawlers, 250 V. DC.
1—Goodman 460, on track, rebuilt, all hydraulic.
2—Jeffrey 61 CLR's on rubber, 26".
3—Jeffrey L-500 Loaders.
2—Myers Whaley, No. 3 Automatic Loaders.
2—Clarkson Loaders, 26" above rail.

MISCELLANEOUS

150 Tons Copper—4/0 and 9 Section Trolley 1/0, 2/0, 4/0 Stranded, 500 MCM, 750 MCM, 1,000,000 MCM Insulated.
1—Each 4', 5', 6' & 8' Hi Pressure Joy & Jeffrey latest type Fans.
1—Complete Five Track Tipple with washers and Air Tables.
5—Complete Tipples, 3 to 5 Track. Wood and Steel.
Steel trestles for drop bottom cars.
All Steel Armco Buildings.
20—Jeffrey Molveyors on rubber tires.
1—¾ Yard Shovel and Back-Hoe.
1—¾ Yard Crawler Crane.
Battery Supply Tractors, Rubber Tired.
1—Cantrell Air Compressor on rubber tires.
10—Air Compressors, 1 H.P. to 40 H.P.
2—Joy self-propelled rubber tired comp., 240 cu. ft.
2—Acme self-propelled rubber tired compressors, 130 cu. ft.
40—Mine Pumps, all types.
1—Differential 40 passenger Man-Trip car.
6—MSA Rock Dusters.
2—Phillips Carriers, 44" and 48" ga.
1—Barber-Greene self-propelled Bucket Elevator.
Pipe, Plastic, Steel Transit, all sizes 1" to 6".
25,000 Roof Bolts, all types.
300—Mine Cars, drop bottom, 42" ga.
90—Mine Cars. drop bottom, 44" ga.
50—Mine Cars, drop bottom 48" ga.
100—Mine Cars, 18" high, end dump, 44" ga.
300—Mine Cars, end dump and drop bottom, 20" high, 48" ga.
1—10 ton Mine Car Scale with Recorder.
4—Brown Fayro 15 HP latst type Hoists.
15—Brown Fayro HKL and HG Car Spotters.
1—Brown Fayro Hydraulic Car Spotter.
1—12 ton Differential Slate Larry.
Incline Hoists, 25 to 50 H. P.
1—Jeffrey 5', 6' and 8', Like New, Aerodyne Fan
2—Storage Tanks, 4,000 Gallons.
2—Storage Tanks, 10,000 Gallons.
500 MCM, 750 MCM 1000 MCM Bare & Insulated.
10,000 Five Gallon G. I. Cans, screw lids.
2,500 tons Relaying Rail, 25 lb., 30lb., 40lb., 50lb., 60lb., 70lb.
Thousands of feet of rubber covered three conductor cable. All sizes.
300—Transformers from 1 to 300 KVA, 110 to 13,000 primary volts.
400—Electric Motors, 3 to 250 H.P.
Huge Stock of Mine Supplies.
600—MSA Mine Lamps, Chargers, etc.
4—Mine Scales, 10 & 20 tons.
5 Truck Scales, 25 to 40 tons, late type.
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THOUSANDS OF OTHER ITEMS.

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LOGAN, WEST VA.

New M-S-A® Pager gives you the convenience and flexibility of a telephone with the amplification of a loud speaker

Now, with one versatile communications unit, you can page key personnel over a loud speaker or converse semi-privately by phone. A flip of the switch on the new M-S-A Pager lets you do either.

Uses Existing Lines

The new unit is a completely self-contained, transistorized telephone. Individually battery-powered, these units utilize existing phone lines, and can be used in conjunction with most other telephones.

Simultaneous Paging

Ten or more Pagers can be installed on a single line. This makes it quite simple to page key men from a number of points . . . simultaneously. Once the man answers, a flip of the switch converts the Pager into a regular telephone for private or semi-private conversing.

24 Volts for Paging . . . 12 Volts for Talking

Two dry cell batteries provide the power source. And the power is expended only when the unit is in use, thus conserving battery life. Estimated battery life: 2 to 3 months on a 5% duty cycle.

Easy Installation and Maintenance

Weighing about 25 pounds, the M-S-A Pager can be mounted on a timber or a rib. All parts readily accessible with removal of four fastening screws which open the front half of the case. Transistors are vibration-proof . . . no filaments . . . so high efficiency, long life are assured.

For additional information, ask the MSA representative to call. And write us for helpful new product data bulletin.

Mine Safety Appliances Company, Pittsburgh 8, Pa. In Canada: Mine Safety Appliances Co. of Canada, Ltd., 500 MacPherson Avenue, Toronto 4, Ontario.

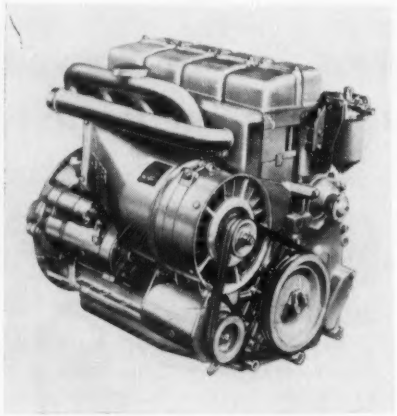
MSA

John H. Evans

● John H. Evans of Uniontown, Pa. has been appointed sales representative for The Cunningham Welding & Machine Service, Inc., Burgettstown, Pa. Mr. Evans was formerly employed by The Jeffrey Mfg. Company as Renewel Parts Sales representative. His wide experience with coal mining machinery and maintenance problems will enable him to be of invaluable service to the coal industry in this new capacity. Mr. Evans will maintain residence in Uniontown and will travel throughout Northern West Virginia, Eastern Ohio, Western and Central Pennsylvania.

● Lister-Blackstone, Inc. now announce an additional Air-Cooled Diesel Engine to their popular SL Series. This is a Model SL4 developing 20 HP continuous at a maximum of 2150 rpm.

This is an extremely neat, compact, lightweight, air-cooled diesel engine with an over-all length of only 29½" and 28" high. All working parts are interchangeable with the



Lister Model SL4, 20 HP at 2150 RPM

popular SL1/3 units. 12 Volt electric starting is included as standard equipment and contrary to the 1 to 3 cylinder versions, cooling is effected by an axial flow fan belt driven from the crankshaft.

● Blood transfusions from recovered burn victims help those who are severely burned.

This method of treatment was used for nine children burned in the 1958 Our Lady of the Angels school fire in Chicago and proved beneficial, three Chicago scientists reported here in the current Journal of the American Medical Association (Oct. 22).

The treatment is based on the premise that a burn releases a toxin, or poisonous substance, into the blood stream and that the blood of a person who has recovered from such a burn contains an antitoxic-like substance. Study of the method was reported by Dr. Sol R. Rosenthal, Dr. James B. Hartney and Wilma A. Spurrier.

They said their findings should be considered "preliminary" because the total effect of transfusing blood from a recovered burn victim has not yet been determined.

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Draglines, Shovels, Cranes, Drills, Trucks
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7-W B.E. Diesel Drag, 140', 7 yd.
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71-B B.E. Crane with 160' boom
625 Page Diesel Drag, 150', 10 yd.
631 Page Elec. Drag, 200', 8 yd.
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4161 Marion 6 yd. Elec. Shovel
2400 Lima 6 yd. Std. & H.L. Shovels
120-B B.E. & 4121 Marion 4 yd. Elec. Shovels
4500 Manitowoc 5 yd. H.L. Shovel
1055 P&H 3 yd. H.L. Shovel
1201 Lima 3½ yd. Standard Shovel
111-M Marion Standard & H.L. Shovels
3500 Manitowoc Standard & H.L. Shovels
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SALEM "HERCULES" AUGERS FOR ELECTRIC DRILLS
Made to Withstand High Drilling Speed Whip And Torsional Strain Of Electric Drills.

Drills holes faster — Will not snap off shank or chip points — Outlasts four or five ordinary augers.
THE SALEM TOOL COMPANY EDgewood 7-3416 SALEM, OHIO, U.S.A.

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54 YEARS EXPERIENCE

TAKES THE RISK OUT OF BUYING USED EQUIPMENT

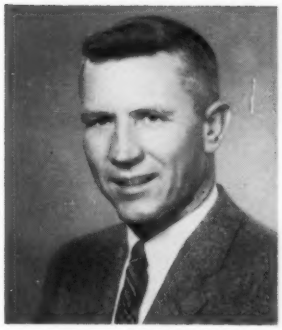
"It's our business to know what a piece of used earthmoving or construction equipment is worth . . . whether it is a Caterpillar machine or a competitive make . . . whether it is almost new, almost worn out, has been repaired or completely overhauled.

"It's our business to know how much skilled repair time and genuine parts can be put into a used machine to balance the cost against remaining future work-life.

"It's our business to know what other dealers are doing with their used machinery as far as repairing and pricing similar makes, models, and machine conditions. And it is our business to stay competitive!

"More than this . . . we know we must offer you the best machines for the price, must give you the best warranties in the business to maintain our reputation as a fair-dealer since 1907. We help you take the gamble out of a used machine purchase. What's more, we have six Caterpillar authorized service-centers to back you with prompt delivery of genuine parts and maintenance.

"Call on our experience and facilities to get the 'best buy in used equipment.' "



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USED EQUIPMENT MGR.

YOUR CATERPILLAR DEALER

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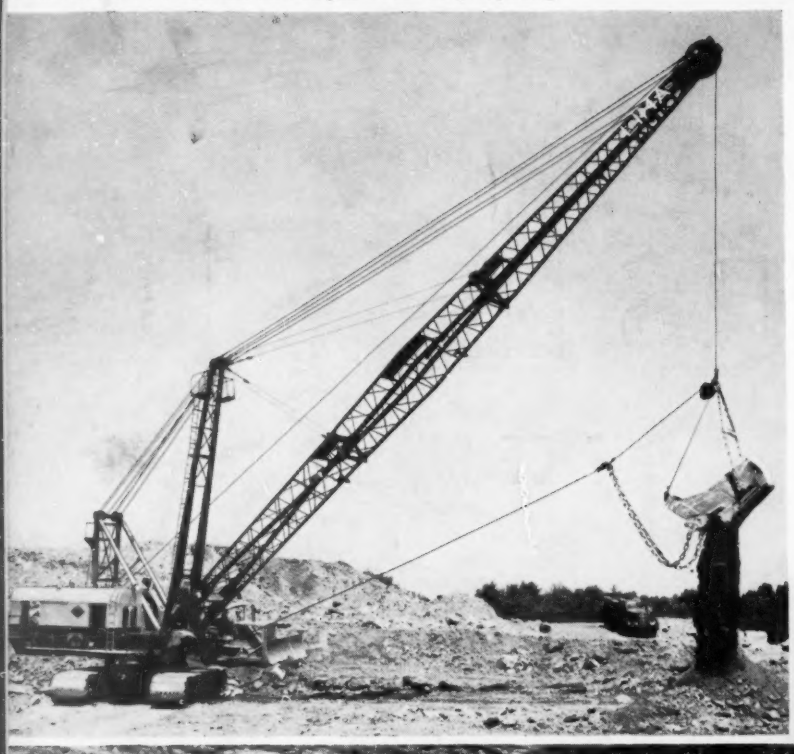

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